ENTOMOLOGICAL NEWS

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JAMES H. B. BLAND,
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Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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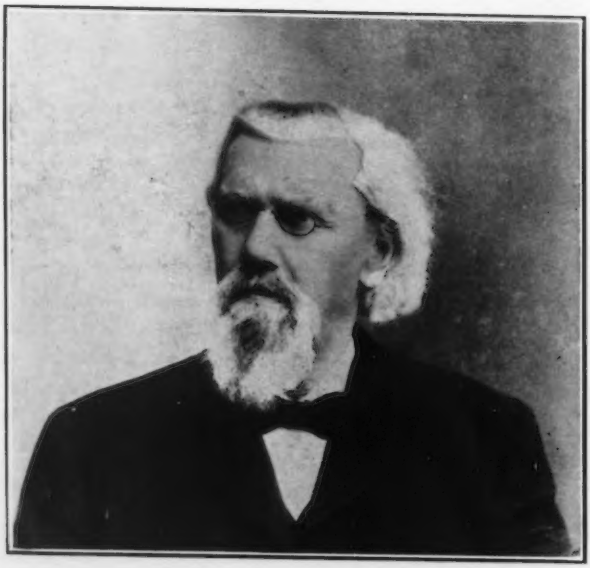

ANTON HOCHSTEIN.

ENTOMOLOGICAL NEWS

VOL. XXXVIII JANUARY, 1927 No. 1

Anton Hochstein, Illustrator of Trimble's "Insect Enemies of Fruit and Fruit Trees."

By HARRY B. WEISS and FRED SCHOTT,
New Brunswick, New Jersey.

(Portrait, Plate I).

In 1865, William Wood and Company of New York published a "Treatise on the Insect Enemies of Fruit and Fruit Trees" by Isaac P. Trimble, M.D.* The greater portion of the book is monopolized by accounts of the plum curculio and codling moth, and of the eleven plates eight treat, for the most part, of the work of the plum curculio. Nine of the eleven plates are colored and the title page bears the statement, "Numerous Illustrations drawn from Nature, by Hochstein, under the immediate supervision of the Author." Seven of the colored plates demonstrate mainly various fruits injured by either the plum curculio or codling moth, another is occupied almost entirely by different stages of the plum curculio and another by the work of the codling moth under bark, together with the heads of birds. The two remaining plates are black and white illustrations showing the application of devices for trapping the plum curculio and codling moth.

The colored plates appear to have been done by hand—by the application of water colors to black and white prints, and the tinting in general ranges from very good to somewhat inferior. Taken as a whole, the colored plates are fair and with several exceptions show some skill. The black and white drawings are the least attractive and rather illy done, but on the other hand they illustrate perfectly the devices which the author of the text evidently wanted brought out. In fact, the same can be said of all the plates, as they exemplify completely just what the text is concerned with. The plate of the plum curculio is the poorest of all, the delineation and coloring espe-

*For an account of the author see Ent. News Vol. XXIX, pp. 29-32.

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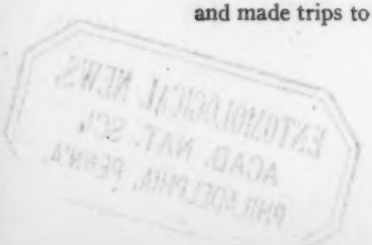
cially being imperfect, and the same is true of the small figures of insects scattered over the other plates. Hochstein had some difficulty in painting insects and was more skillful with other subjects. On page seventy-three of the "Treatise," Trimble, writing about the metallic tints of the plum curculio, states "I have often wished that these vivid colors could be transferred to canvas; and my friend Hochstein has several times made the attempt, but he has now abandoned the undertaking as beyond his power."

Anton Hochstein was born in Bavaria, September 3, 1829, and acquired his artistic training in what was known as the Düsseldorf School. He came to this country about 1849 with his father and mother, two brothers, Louis and August, and a sister, Barbara, the entire family going to a farm near Buffalo, New York. A grocery business was started by his brothers Louis and August about 1860 at the corner of Garden and Seventh Streets, Hoboken, Anton not being very active therein. Louis, it appears, served in the Civil War, and Anton at that time lived in New York City where he was engaged, according to Mrs. J. K. McDougal, now living in Hoboken and formerly on intimate terms with the Hochstein family, in doing illustrations for Henderson or Young and Elliott, seedsmen's catalogues and probably for some of Kate Greenaway's books for children. It was not possible to verify either of these statements by the location of such illustrations.

Mrs. McDougal stated also that Anton studied in Münich and traveled considerably in Europe, but did not know whether such activities took place before or after his residence in New York City. He is supposed to have lived in New Jersey from about 1869 on, or some 42 years, at 58 Seventh St., Hoboken, or what is now 162 Seventh St., in an old-fashioned three-story and basement brick building, a short distance from Stevens College. This is five or six years later than the time Trimble says the original paintings for his "Treatise" were made at Newark, New Jersey. In view of this Anton might have moved to New Jersey prior to 1869, or he perhaps lived in New York and made trips to Newark to do Trimble's work.



Hochstein appears to have been interested in the painting of various subjects, using both oil and water colors, some of his pictures depicting rural scenes, Swiss and Scotch views, flowers, fruits, birds and insects. The Free Public Library of Hoboken owns some of his paintings, a flower panel in water colors and an oil painting of about a dozen Lepidoptera. In the office of Mr. August Peter, of Hoboken, there is a bird group in oil by Hochstein which appears to be very well done. His ability should not be judged entirely by the colored plates in Trimble's book, because some of his other work is far superior. His pictures were exhibited at Weber's art shop on Washington Street near 4th Street, Hoboken, some time between 1892 and 1916, but the sales were said to have been rather slow because of the absence of discrimination among Hoboken's art patrons at that time and their unwillingness to pay what they considered too high a price.

Mrs. B. Sontag, the present occupant of the house where Anton lived with his brother Louis and sister Barbara, and a young girl at the time, recalls him as a jovial, socially inclined man, not overly concerned with prosaic or mercenary matters, and similar recollections were made by others who knew him. Mrs. Sontag remembers that an acquaintance once asked him to replace a water scene with a grass effect, "ein grass garten anstreichen, und das wasser austreichen." Anton became vastly indignant, exclaiming "das wasser austreichen? Ich bein kein austreicher und anstreicher; ich bein ein artist!"

The Hoboken Library, of which Thomas F. Hatfield was librarian at the time, was the rendezvous of a coterie of artists and the ethically inclined, and here were exhibited many of Hochstein's water colors. Hochstein was also intimate with William Peter, then head of the Peter Brewing plant at Weehawken St. and Hudson Ave., receiving from him moral encouragement and perhaps financial aid. It requires no great stretch of the imagination to recreate the convivial scenes presented by these friendly meetings in a day when seidels bumped openly and freely and when the leading figure of the juntas was the proprietor of a brewery!

Whether the remuneration for his pictures and semi-commercial work was inadequate or whether his habits were such as to preclude the acquisition of much worldly goods is now a matter of conjecture. Anton never married, and at his death on November 3, 1911, in St. Mary's Hospital, Hoboken, at the age of 83, he left nothing by which success is usually measured. His death was pronounced by Dr. Henry T. Von Deeston to have been due to chronic myocarditis and he was buried in the Hoboken Cemetery November 5, from Volk's Mortuary. His sister Barbara, the last of the family, lived but a few years afterward.

The photograph accompanying this account was obtained through the courtesy of the present librarian, Mrs. Nina Hatfield, of the Hoboken Library, and is from an original taken a few years before his death. A short death notice (inserted by Mrs. McDougal) occurs in the "Hudson Observer" for Friday and Saturday, November 3 and 4, 1911. In Cassino's "Naturalists Directory" for 1884 he is listed as a "botanical artist" and in "Catalogus Plantarum in Nova Cæsarea Repertarum" (1874) by Willis his name occurs in the botanical directory as A. H. Hochstein.

Food Preferences of the Black Cricket (Gryllus assimilis) with Special Reference to the Damage Done to Fabrics (Orthop.).*

By MARGARET B. SAVIN, Philadelphia, Pennsylvania.

For five years during my August vacation at Avalon, New Jersey, I have been interested by the black *Gryllus* which is so abundant in sandy fields and in houses there. These crickets possess an annoying characteristic, which is not constant, but rather spasmodic, the habit of chewing holes in woolen and cotton goods such as suits, sweaters, overcoats, dresses and curtains. Having seen articles damaged by crickets in this way, I determined to discover, if possible, the causes for

*Submitted to the Graduate School of the University of Pennsylvania in partial fulfillment of the requirements for the degree of Master of Arts.

such action on the part of these insects which are normally vegetarians. Various theories have been advanced for the stimulus which urges *Gryllus* to attack woolen materials, but no definite attempts to find its food habits and preferences have, so far as I can learn, been made.

Observers (Popenoe 1917, Quaintance 1907) of the damage done by crickets upon strawberries, mushrooms, cranberries, grain and other food crops urge the use of ground potatoes or carrots with arsenic, or of deep vessels of vinegar, as a means of control. Severin (1920) reports heavy damage worked upon alfalfa seeds and seed pods and also on binder twine. The control he suggests is a bait of bran, molasses, oranges, water, and arsenic. As a bait for trapping specimens for my work, I used finely cut potatoes and carrots in a large box in the high grass. Many times I visited the trap but found the scheme unsuccessful. After making various types of boxes and using the suggested liquids and solids, I finally resorted to catching them by hand in the field or by a tumbler in the house.

Beginning my work on the first of August, I found that all of the crickets which I caught were wingless nymphs. This was true for the first two weeks. Evidently in this locality *Gryllus* reaches the adult stage only at the end of the second week in August.

The specimens when first caught averaged eighteen millimeters in length. In the adult form they became very little larger, with antennae half again as long as the body, shiny black heads, dull greyish thorax and brown wings.

To locate *Gryllus* in the sandy fields of high grass beside the house, it was necessary to lift up pieces of driftwood, or disturb piles of damp grass freshly cut from the lawn, or turn over a piece of damp carpet or cardboard. By this method I secured some twenty individuals one afternoon.

Most of the fifty crickets upon which I experimented were caught in the house, either beside the fireplace, running across the floor of a room, in a drawer of the kitchen cabinet among the linen towels, on the shelves among the groceries, in the

vegetable basket, or in a shoe on the bedroom floor. The method I used most in securing the subject was to place over it a tumbler, after which I slipped a card under the edge closing the top. By this procedure, the individual was not harmed at all and it was an easy matter to cover the glass with a piece of netting. From experience I learned that the cotton mosquito netting which I used to cover the tops of the glasses was impractical. About six of the first crickets caught escaped from confinement during the night, by chewing holes in the netting. I soon made caps of aluminum screening to fit the jelly glass cages used for the work. Each numbered glass confined a separate specimen, for which was kept a card containing its number, size, sex and the date and time of capture. For the food trials the exact time of feeding and time required for eating was recorded.

As only nine of the fifty died during imprisonment and five of the nine lived normally from nine to twenty-five days, I judge that the jelly glass quarters were not ill-adapted. When the males became winged, they chirped loud and long during the day as well as the night which seemed to indicate that they were comfortable. Of course, a pipette of water was given each specimen daily.

When the cricket was caught it was confined with water only, for a certain period, in order to have the subjects, as far as possible, in the same state of hunger. This period of fasting averaged twenty hours.

Among the foodstuffs tried, were carefully measured pieces of raw tomato, peach and potato, lima bean pods, green lima beans, cooked lima beans, cooked corn, sugar, cornstarch, dried beef, raw beef and sweet cake. The following is a complete list of "foods" used in the experiments.

Tomato (raw)	Suiting—grey—new—clean.
Potato (raw)	Suiting—grey—new—spotted (peach juice).
Carrot (raw)	Suiting—grey—new—spotted (bacon).
Lima bean (raw)	Suiting—blue—old—perspired.
Corn (raw)	Suiting—blue—old—spotted (bacon grease).

Lima bean (cooked)	Suiting—blue—new—clean.
Pea (cooked)	Suiting—blue—new—spotted.
Corn (cooked)	Broadcloth—henna—new—clean.
Lima bean (in pod)	Broadcloth—henna—new—spotted (peach juice).
Lettuce	Linen—white—new—spotted (peach juice).
Peach (raw)	Linen—pink—new—clean.
Blackberry (raw)	Silk—tan—new—spotted.
Green grass	Silk—pink—new—clean.
Green leaf of Perennial Sweet Pea	Cotton—white—old (a curtain).
Sugar	Cotton—white—new—clean.
Cornstarch	Rubber—blue and white.
Sweet cake	Paper—with paste.
Dried beef	Paper—without paste.
Bacon	Paper—crepe—new—clean.
Mosquito (dead)	Corn worm pupa.
Housefly (dead)	

To my surprise there was not a thing in this list of varied carbohydrate, protein, fat, and mineral matter which was not eaten in part or entirely, by at least one if not all individuals.

Though a careful record of results was kept, I feel that the average times required for eating various foods are hardly an indication of preference. To my mind, the results obtained for foodstuffs are seriously affected by the molting process which was going on until the middle of August. Frequently I found a pale, motionless cricket which had just molted with its chitinous shell lying beside it. At times I discovered one consuming the last bits of the newly cast skin. Obviously the insect would not be hungry after having eaten its molt, nor would it be in condition to eat during the critical time twenty-four hours or so before the beginning of the process. Thus, pieces of food remained several days in the glass before they were eaten, while a normal active cricket would consume them within five or six hours.

The following reproductions of the records kept for subjects numbered 22 and 34 will serve to illustrate method, times of feeding, and type of results obtained in the work.

No. 22. Male—length 19 mm. Nymph; adult in 16 days.
8/5 — 5:00 P. M.—caught in field beneath wet carpet; confined with water.
8/6 — 2:30 P. M.—given 1 by 3 by 3 mm. piece of potato.
— 5:30 P. M.—gone.
8/7 —11:15 A. M.—given cooked corn kernel.
— 8:45 P. M.—gone.
8/10— 9:00 A. M.—given green lima bean.
8/11— 9:00 A. M.—2/3 eaten; given navy blue suiting, new, 25 by 27 mm.
8/12— 8:00 P. M.—no result; given small cooked lima bean.
8/13— 7:30 P. M.—bean well eaten.
8/19—10:30 A. M.—given grass.
8/20—11:00 A. M.—no result.
8/21—11:30 A. M.—just molted to adult. I removed skin from glass.
8/21— 2:30 P. M.—given new grey suiting spotted in center with peach juice.
8/22— 6:00 P. M.—no result.
8/25— 1:00 P. M.—no result.
8/26— 7:30 P. M.—one corner chewed, cloth not taken into body.
8/29— 9:30 A. M.—one corner well frayed. Cloth left in and lettuce given. Began on latter at once.
—12:00 P. M.—all gone—given rubber flower.
8/30— 7:00 P. M.—well damaged — edges of white center chewed.

No. 34. Female adult.
8/12— 1:15 P. M.—caught on porch floor.
8/14— 9:30 A. M.—given navy blue suiting, new—one corner sweetened by lemonade. It immediately investigated.
— 9:40 A. M.—chewed a ragged hole in side where spot is.
8/15—11:00 A. M.—no further damage—spot of bacon fat put on.
8/16—10:00 A. M.—good sized hole chewed but not on spotted portion; given new suiting—clean.
8/18— 6:00 P. M.—large holes chewed.
8/19—10:10 A. M.—much damaged; given 2 blades of grass (each 50 mm. in length).
— 2:00 P. M.—grass gone all but 15 mm.
8/20—10:20 A. M.—grass all gone.

—11:15 A. M.—given small green lima bean—began to eat at once.
— 7:30 P. M.—completely gone.
8/21— 2:30 P. M.—given rubber flower from bathing cap—began to eat at once and continued for three hours.
8/22— 6:00 P. M.—petals greatly damaged.
8/24— 9:30 A. M.—given clean, new, grey suiting.
8/26— 7:30 P. M.—greatly damaged. Bits of cloth lying about.
8/27—11:30 A. M.—given cotton curtain 2 thicknesses and hem (4 thicknesses).
8/28— 8:30 P. M.—hole through two thicknesses; put in glass with No. 43 male.
8/29— 9:30 A. M.—neither harmed. Given lettuce. Both eating at it.
8/30—12:00 A. M.—given piece of blue rubber.
— 7:00 P. M.—5 small holes in it.

As I was particularly interested in the reactions to cloth, most of the days were devoted to trials on woolen and cotton materials. The work of necessity went slowly. With the vegetables, I had to first determine the approximate amount of a cricket's meal in order to have the food eaten within as short a time as possible. Most of the tests with foodstuffs were performed with nymphs, as they were the only individuals available in the early part of the month.

Sixteen of the specimens, I brought back with me to Philadelphia, with the intention of trying adult crickets on potato, tomato, carrot, etc. The reactions to food in the city were quite abnormal, as foods preferred at the shore, such as beans and corn were ignored; so that most of the results for these trials are omitted. They seemed to thrive upon lettuce and moist bread when kept together for a week, in one large can with sand in the bottom and aluminum screening on top.

In order to distinguish the trials made in the city from those made previously, I lettered the subjects. The record card for K is here included. A liking for both animal and vegetable matter is exemplified.

K. Female adult.
9/8 —10:00 P. M.—confined in jelly glass with 1 inch of sand on bottom. Given water.

9/9 — 5:07 P. M.—given three house flies (dead).
— 5:20 P. M.—all eaten.
9/10— 6:15 P. M.—tomato given and 1 raw corn kernel.
9/11— 6:00 P. M.—both gone; given raw beefsteak—began at once.
— 6:08 P. M.—gone.
9/13— —given cooked lima bean; eaten in a few hours. Subject laying many eggs in sand.

Of all the vegetables used in the food trials, I should say that green lima beans proved most popular, with cooked corn kernels coming next on the list. This I state from my observation at the time when feeding was going on. My statistics do not seem to bear this out. As I have stated, the apparent inaccuracies must be due to the interference of the molting process. In a study of "Field Crickets in Manitoba," N. Criddle observed that they like green peas and soft corn grains. This reference I was pleased to read after completion of my tests, as it seems to confirm my results. From the figures for raw and cooked lima beans and corn, given in Table III, I conclude that the cooked vegetables are preferred.

From my results, I cannot see that carrots and potatoes are especially desired, as others (Felt 1909, Popenoe 1917) indicate. The table of statistics gives a shorter time for potatoes than for beans and corn, but the portion of potato given was a cube 1 by 3 by 3 millimeters, which is small compared to a small bean or a corn kernel.

(To be continued)

Another "Black Witch" in the North (Lepid.: Noctuidae).

On July 25, 1926, while visiting a property on S. Cottage Grove Ave., Urbana, Illinois, in the interests of a termite eradication program, I noticed a much battered specimen of *Erebus odora*, the "Black Witch," lying on the window sill. It was dead. Upon inquiring of the owner I learned that the moth had been picked up in the street on the above date and was then in the same condition as when I first saw it. The specimen was a female. Strong southwest winds had prevailed during the two days preceding the capture, which may account for the presence of this southern resident in this northern locality. —AUGUST E. MILLER, State Natural History Survey, Urbana, Illinois.

Oddities in Cocoons of some Common Saturnidae (Lepidoptera).

By AUGUST E. MILLER, Urbana, Illinois.

Beginning during 1913 and continuing for a period of five years, it became a hobby with me to scour the country for a radius of ten miles about Zanesville, Ohio, for insect specimens of whatever kind I might chance to find. Saturnid cocoons were quite common and each year I collected from 1,000 to 3,000 or more of the several species occurring in the locality. Among these were many that differed in varying ways from normal specimens. The more outstanding deviations have been of such interest to me that I am presenting them with the thought that they may be of some interest to others. I have have not spent much time in trying to determine how often similar facts have been recorded.

Samia cecropia Linnaeus.

On March 10, 1914, I found a large cocoon of this species spun on a small elm tree overhanging the Licking River. During the flood of March, 1913, this specimen had apparently been submerged for a period of several days. The sediment had filtered into and thoroughly impregnated the outer case of the cocoon. Upon drying it had become very hard and gave the cocoon almost a stone-like texture. The submergence had not killed the pupa. At the time for emergence the adult had split the pupal skin and attempted to work its way to the outside. It was able to push its head through the opening of the inner case but then encountered the mud-blocked exit of the outer. It had apparently labored hard to pass through this as hairs and scales were nearly all worn off the head region. The specimen was a female and had extruded a number of sterile eggs behind it in the inner case of the cocoon. The wings were very small and much malformed but the color was quite bright a year later.

On December 15, 1916, a *cecropia* cocoon was found on an old rail fence that had partly fallen down since the spinning of the cocoon. One of the rails had fallen across the opening of the outer case effectually blocking it. The cocoon was evi-

dently spun during 1915. The moth, also a female, had attempted to emerge. It was unable to do more than push the head through the opening of the inner case. In this position it had apparently struggled to escape, for all the hairs and scales were worn from the head, but to no avail. No eggs were deposited in this case and the wings were badly malformed and the antennae torn.

During the years between 1913 and 1918 numerous paired and triple cocoons of this species were found. No case has ever come to my notice in which either of the cocoons was so placed as to impede the egress of the moth from the other cocoon. Several specimens of twin cocoons have been found which appeared to have been spun at the same time since there apparently had been a slight interweaving of the silk between them. In two cases caterpillars had spun their cocoons against deserted ones of preceding years. Sexual pairing has not been the case where cocoons have been thus found in close contact with each other.

Those who secure cocoons by searching them out from among natural environments and do not rear the insects to this stage can imagine with what satisfaction I gathered 79 healthy specimens of *cecropia* cocoons from three small trees within six feet of each other. A cottonwood, a wild crab, and a peach-leaf willow comprised the group and the cocoons were almost equally distributed among them. I judged that a fertile female had become injured near this spot and this large number of cocoons were all the progeny of one individual.

Callosamia promethea Drury.

On February 14, 1917, a cocoon of this species was taken and upon testing it it seemed to contain the pupa of a parasite rather than of a moth. It was cut open. The outer and inner cases were normal in orientation and proportion, but the caterpillar had pupated in an inverted position, that is, the head of the pupa was directed toward the ground, which is a condition quite unusual for any suspended species. The pupa was removed and kept under careful observation and during the following summer a normal female moth appeared. Had the cocoon remained undisturbed it seems safe to conclude that the moth

would never have emerged although it might have broken the pupal skin. The host was *Prunus serotina.* I secured no progeny from this moth.

On March 10, 1917, a twig of *Prunus serotina* was found upon which nine healthy cocoons of this species had been spun on about 11 inches of twig. Each leaf in this length had been taken by a caterpillar for spinning its cocoon.

On November 17, 1918, a double cocoon of *promethea* was found upon *Prunus serotina.* Selecting a large leaf of the host, one caterpillar had formed a normal cocoon using the lower half. After completion another larva had used the remaining upper half in such a way as to seal up the lower cocoon so that it would have been impossible for the moth to emerge. A normal female appeared from the upper cocoon in due time.

In addition to these finds I have frequently secured cocoons of *cecropia* and *promethea* containing from one to six or more kernels of corn. Because the silk about the cocoon openings was always pushed in as though from the driving of the beak of some bird, it has been my opinion that these cocoons were serving as caches for some bird, although I have never seen birds in the act of placing the grain in them. The corn has always been in the loose middle layer of silk, although in *promethea* they were never pushed beyond view as one looked into the top of the cocoon. These grains of corn have never been observed to interfere with the emergence of the moths. I have never seen birds removing the kernels.

Since coming to Illinois this past winter I have seen several cocoons of the white-marked tussock moth into which several grains of corn had been inserted.

Telea polyphemus Cramer.

During each year of my collecting several cocoons of this species were found in which the larva had spun side by side, giving twin or paired cocoons. I have never found specimens in which one cocoon interfered in any way with the emergence of the moth from the other. Some have been spun together in leaves upon the host plant while others have been spun in this manner among leaves upon the ground.

Homopterological Gleanings No. 2. The Types of Certain Genera of Membracidae.

By Z. P. METCALF.[1]

The types of the genera of Homoptera have never been fixed. Sometimes the accepted types do not conform to the rules of nomenclature and need to be changed. There is apparently in the minds of many entomologists who are not systematists confusion between the generic concept as applied to the actual insects and the names that are to be applied to these insects. The former are not amenable to rules, and the conception of what constitutes generic limits is constantly shifting as our technique grows better and we give more and more attention to the finer details. Names, however, are not only subject to rules, but they must conform to rules or nomenclatural chaos is the result. For our purpose we may accept the "Entomological Code" of Banks and Caudell, as the rules are especially applicable to entomology and are very clearly stated. If we are to achieve stability in nomenclature, it can be done only by laying a firm foundation on a carefully considered set of rules. With these rules in mind, a survey of Dr. Funkhouser's manuscript of the "Catalog of Membracidae" shows the following changes to be necessary.

1. The Genus **Combophora.**

The genus *Combophora* was established by Germar in 1833, Silbermann's Rev. Ent. I: 177, for two species, *Centrotus horridus* Fabr. and *C. trifidus* Fabr. In the same volume, page 227, Burmeister monographs this genus, describing fourteen species in all including *horrida* and *trifida*, as well as two species, *vulnerans* and *Besckii (sic)*, described as new by Germar. *Besckii* cannot, therefore, be the type of *Combophora*, as it was not included in the genus at the time of its original description. Of the two species originally included, *horrida* belongs to *Heteronotus* Laporte 1832 and *trifida* Fabr. belongs to *Cyphonia* Laporte 1832. The name *Combophora* is, there-

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fore, not valid as its only included species belong to previously described genera. The only name available for the genus *Combophora* auctorum seems to be *Anchistrotus* Buckton, 1903, Mon. Memb: 147, haplotype *A. obesus* Buckton.

2. The Genus **Hoplophora.**

The genus *Hoplophora* was first used by Perty for a genus of *Orthoptera,*[2] Delect. Anim. Brasiliam 1830 (1830-34). The part on *Orthoptera* must have been published prior to 1833, as it is reviewed in Silbermann's Rev. Ent. I: 1833, (vide Metcalf, Ent. News XXXII: 238). Germar, Silbermann's Rev. Ent. I: 177, proposed the same name for a genus of Homoptera *Membracidae,* citing *Membracis sagittata* Germar and *Membracis triangulum* Germar. *Sagittata* was removed to the genus *Platycotis* by Stål in 1869, Hemip. Fabr. II: 37, and is now considered a variety of *P. vittata* Fabr., the type of *Platycotis.* Kirkaldy recognized that *Hoplophora* was preoccupied and proposed *Hoplophorion* as a new name. This name will stand, and *Membracis triangulum* Germar is its type.

3. The Genus **Enchotypa.**

The genus *Enchotypa* Stål 1869 has as its type *Hoplophora granadensis* Guerin, cited by Stål in error for *Hoplophora fairmairei* Guerin. Stål later corrected this, but this correction cannot stand according to the "Entomological Code," 96: "The genotype of a monobasic genus is the only specific name cited irrespective of misidentifications or restrictions." The name *Enchotypa* is a synonym of *Potnia* Stål 1866, type *Umbonia venosa,* Germ. I propose the name *Stalotypa,* type *H. fairmairei* Guerin, for the genus formerly known as *Enchotypa* Stål.

4. The Genus **Hemiptycha.**

The genus *Hemiptycha* was described by Germar in 1833, Silbermann's Rev. Ent. I: 177, for the following species: *Membracis galeata* Fabr., *M. obtecta* Fabr., *M. bimaculata* Fabr. and *Centrotus spinosus* Fabr. In Silberman's Rev.

[2]According to Scudder's Nomenclator Zoologicus; Neuroptera according to d'Orbigny's Dict. Hist. Nat.

Ent. III: 244-247, Germar described this genus more in detail and added six species. Many species have been added to this genus by the various workers since that time, but most of these have been removed to other genera until at the present time only three species are generally recognized as belonging to this genus, and three others are doubtfully referred here. Of these species *Membracis punctata* Fabr. 1775 (equals *Hemiptycha cervus* Germar 1835) was named as type by Blanchard (d'Orbigny's Dict. Hist. Nat. VI: 533) and has been generally recognized as the type since that time. This species was not included in the genus until 1835, therefore, this designation cannot stand. The disposition of the four species originally included in the genus by Germar is as follows: *Centrotus spinosus* Fabr. 1803 (*Membracis spinosus* Fabr. 1775) is the haplotype of the genus *Umbonia,* Burmeister 1835, Handb. Ent: 138; *Membracis bimaculata* Fabr. 1794 is the haplotype of the genus *Thelia* Amyot and Serville, Hist. Nat. Ins. Hemip.: 540; *Membracis galeata* Fabr. is one of the two species mentioned by Stål when he established the genus *Archasia* 1867, Bid. Hemip. Syst: 556. It was designated as the logotype for this genus by Van Duzee 1916, Check List Hemip. North Amer. 60. *Membracis obtecta* Fabr. is the haplotype of the genus *Hypselotropis* Stål. 1869 Hemip. Fabr. II: 26. Since this name had already been used, Kirkaldy proposed the name *Gelastophora* for *Hypselotropis,* Ent. XXXVII: 279. By elimination *M. obtecta* Fabr. becomes the type of *Hemiptycha* Germar 1833, and *Hyselotropis* Stal 1869 and *Gelastophora* Kirkaldy 1904 are synonyms. While the only remaining species is not necessarily the type of the genus, it would seem to cause much less confusion in this case to select *M. obtecta* Fabr. as the type of *Hemiptycha. Hemiptycha* Auctor. is without a name, and I propose *Hemikyptha,* type *M. punctata* Fabr.

5. The Genus **Membracis.**

The genus *Membracis* was described by Fabricius in 1775, Syst. Ent: 675, including fourteen species. The only one of these species that would be considered as typical of the genus

at the present time is *Cicada foliata* Linneus 1766. So far as I have been able to discover there has been no definite type fixation for this genus. Kirkaldy states, Entomol. XXXIII: 27, that Fabricius gives *atrata* as a pseudotype, 1803 Syst. Rhyng: 6, but this is incorrect, as there is nothing to indicate a type designation, and so far as I can discover generic types were not used at that time. Again Kirkaldy, Ent. XXXIII: 264, states that Latreille, Nouv. Dict. Hist. Nat. XXIV, gives *foliata* as the type of *Membracis*. I do not have a copy of this volume before me at the present time, but I do not remember that generic types were designated in this work. My opinion in this matter has veen verified by Mr. W. J. Fox, Assistant Librarian, Academy of Natural Sciences, Philadelphia. Van Duzee, Cat. Hemip: 560, gives *Membracis* Fabr., logotype *atrata* Fabr., but this cannot be correct as *atrata* was not one of the originally included species. Since the type of this genus has apparently never been designated, I would designate *Cicada foliata* Linn. 1766 as the type of *Membracis* Fabr. 1775.

Megachile subexilis Ckll., a Resin-Working Bee (Hymen.: Apoidea).

By CHARLES H. HICKS, University of Colorado, Boulder, Colo.

The *Megachile* bees are commonly termed the "Leaf-cutters" because of a very general habit they have of cutting pieces out of rose leaves, rose petals, poppy petals, the petals of hollyhocks, aspen leaves, and from the leaves and petals of a host of other plants. The pieces cut are of two general shapes, small round ones and oblong larger ones. The former are used for the ends and the latter for the sides of the thimble or oblong-shaped cells into which the pollen and egg are placed and in which the young bee develops, spins its cocoon, pupates and from which it later emerges mature. The cells may be placed in tunnels in the ground, *e. g., M. perihirta,* or in the old stems of plants, *e. g., M. montivaga,* or in various and unique places.

This habit of cutting leaves is one of long standing as evidenced by the fact that Professor T. D. A. Cockerell has found unmistakable evidence of it having existed more than a million years ago. Fossil leaves have been found at Florissant, Colorado, from shales dating back to the Miocene Period, from which the characteristically shaped pieces, similar to those made by the *Megachile* bees of today, have been cut. In one specimen a number of these had been cut, the edges sharp and clearly defined, showing that they could not have been the result of some chance injury. It seems very probable that these were made by *Megachile* bees, for the cuttings from the leaves are so very like those of today while fossil *Megachile* bees are found from these same rocks. The fact that a number of pieces were cut from one leaf suggests that the bee had a habit of returning to the same leaf for material. This habit is observed very often now where a rose may be found completely riddled from the many visits of a bee.

Many observers have recorded finding *Megachile* bees using pieces of leaves and petals for cells and the habit is so well known that no attempt will be made to enumerate the species observed. Today the *Megachile* bees are numerous and widespread and wherever observed have been found to possess this same habit with a very few exceptions. Some of these exceptions were first noted by Mr. Henry Hacker (1915) who found certain of these species in Australia using resin for their nests. The bees found there, which have been termed "resin-workers," are *M. hackeri* Ckll., *M. rhodura* Ckll., *M. mystacea* (Fb.), and *M. ustulata* (Sm.). These bees Professor Cockerell has placed in a new subgenus called *Hackeriapis*. He informs me that Mr. F. H. Timberlake has found *M. schauinslandi* Alfken, an Hawaiian species, a resin worker and sometimes using keyholes for sites.

Hacker found specimens of *M. ustulata* carrying masses of a resinous substance in their mandibles with which they line crannies and holes in timber. A resin cell was taken containing a half-grown larva of this species. *M. mystacea* was found to use resin with which it lined the clay cells of the nest of a

wasp, *Sceliphron laetum*. The exit holes were sealed up with the same material. Hacker did not find *M. rhodura* nesting, but he inferred that it used resin for the bees were observed visiting a Eucalyptus tree, from which resin had oozed, and rasping the patch of resin with the mandibles. Both sexes were captured on these resin patches and he inferred that the males assist the females in constructing the cells. This latter point should be actually observed before ascribing the function to the male. *M. hackeri* was bred from an old clay nest of *Abispa*, the cells having been lined with resin which also filled up the exit holes. It is quite probable that more resin workers will be found. A species recently described by Professor Cockerell (1925) called *M. orthostoma* and found on Sibuyan Island, Philippines, had a large mass of resin sticking to the mandibles.

Many bees of the genus *Megachile* here in Colorado have been observed to use leaves in the construction of cells, among which are *M. perbrevis, M. brevis, M. montivaga, M. fortis vestali, M. wootoni* and others. In this country there seems to be no record of any bees of this genus which do not use leaves in the nest. *M. subexilis* affords an unique and interesting exception, building its nest of resin and using neither leaves nor petals. The following account is based on my observation and study of the species.

The nest was found April 28, 1926, in the side of an almost vertical sandstone cliff at White Rocks, near Boulder, Colorado. The nest was about 10 feet above the ground and the outer evidence was a plug of resin completely filling a hole in the rock. The rock was not so hard but that the nest could be dug out with a jackknife. The tunnel went in for 3 inches and had 2 cells. The plug to the outside was 5 mm. in length and 5 mm. in thickness. Immediately below this was a cocoon very thin, light in color and surrounded on the sides by resin 2 to 4 mm. in thickness. The extreme thinness of this cocoon was in sharp contrast to that of *M. montivaga* which has a cocoon quite thick and dense. It is probable that *M.*

subexilis is admirably protected by the resin and rock and a thick cocoon is not needed.

A very thin partition of resin separated the inner cell from the outer and from it a larva was taken April 28. This larva, from the inner cell, was surrounded by a cocoon similar to that from which *M. subexilis* later emerged although somewhat thicker. The larva pupated May 8 and, from its form, appeared to be a *Coelioxys* pupa. On May 24 the pupal skin was cast after which the bee remained inactive for two days while the wings and nervures of the wings changed from clear transparency to dark margins and light nervures. The next day the bee was somewhat active and on the following very active. This date, May 28, was considered to be the time when it had reached maturity. The bee was determined to be a female *Coelioxys gilensis* Ckll., agreeing in most points with the specimens in the collection except that the tegulae were dark instead of the usual reddish color. This parasite along with the host was kept at about 21 degrees C. from the time secured until the bees reached maturity, the development thus being materially hastened. The larva of *C. gilensis* winters over in the larval stage as probably does that of *M. subexilis* also.

Last summer at Boulder, males of *M. subexilis* were taken June 20 and July 3; females were taken August 9 and 11. It seems probable that we have more than one brood here a year.

Professor Cockerell has kindly identified these specimens collected and reared and has given me references to the known resin-workers.

All the resin bees of the genus *Megachile* observed by Hacker had parallel-sided abdomens and were quite similar in appearance. The species found using resin by Timberlake look much like these bees in shape and in the dark color of the wings and the red pile of the abdomen and thorax. *M. subexilis* has a parallel-sided abdomen and a very little reddish pile on the male. Robertson '03 has proposed a new genus, *Oligotropus*, for a species very closely related to *M. subexilis*. The writer

does not feel capable at present of attempting to determine the proper classification of this species. However, from a comparison of the genitalia of *M. subexilis* with the genitalia of other bees of the genus *Megachile* no radical difference was observed. This species has a parasite common to the genus, does not differ greatly morphologically from other bees of the genus *Megachile* and has therefore been considered a species of it. A more complete and comparative study of this and other resin workers may show good reasons for separation.

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ID. 1925. Ann. & Mag. Nat. Hist. xvi, Oct., p. 417 (*M. orthostoma* Ckll., and quotes Timberlake in footnote concerning *M. schauinslandi* Alfken).

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RAU, P. 1926. Trans. Acad. Sci. St. Louis, xxv, No. 7 (Aug.), p. 203 (Resinous material in hole of *M. campanulae* Robertson, a species of *Oligotropus*: "but I had no way of knowing whether this or another insect had done the storing").

ROBERTSON, C. 1903. Trans. Am. Ent. Soc., xxix, p. 168 (*Oligotropus*).

Correction for December, 1926, Entomological News.

Page 316, 2d line, should read

"1. Length of antennal segment I not equal to width of head," etc.

The proof as returned by the author was correct; in resetting the line to bring the first word further out to the left, the compositor omitted the word "not."—EDITOR.

Change of Address.

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ENTOMOLOGICAL NEWS

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The Study of Insect Relations

If the past teaches us to understand the main outlines of the distribution of our insect world, we will learn to grasp the details, the exact occurrence, the reality itself, in so far as we give ourselves up to the present. This means a flight away from books, catalogs, theories and formal logic into out of door life. Simple as this seems, it is difficult to the city man of to-day wrapped up in books, writing and speech. But if he has gone through the books and theories and has not become too old thereby, he will perhaps still be capable of hearing from living Nature some of her secrets, which are not withheld from him as long as he receives them naively and free from theories.

To understand the single species in its surroundings, in its natural relations, is an alluring aim, the accomplishment of which raises us far above the activities of the mere collector and cataloger, although many obstacles lie in the way. Be it briefly intimated that we entomologists must follow the botanists who today study plant associations as unities and have made their relations to soil and climate, their succession in time and their transformation in the same locality the subject of comprehensive researches. On this theme there are many fine works which concern our land, yet it is self-evident that all is yet in *flux* and, unfortunately, not free from the unfruitful strife of the schools.

But the methods of research can not be simply carried over from the botanical to the entomological field; the moving animal is not to be conceived in the same way in his relations to his surroundings, in which he is in general freer than the plant, fixed in its habitat. The idea of association and especially that of succession requires, for its transfer to corresponding relations in the insect world, a careful testing before it can be accepted from botany. Above all, the relations of insects are more complicated in this: that their associations presuppose the associations of plants and consequently offer a potentially higher complication of their dependences. Almost all this awaits a coming generation of entomologists.—F. RIS.

[From his address on The Geographical Distribution of the Insects of Switzerland at the Third International Congress of Entomologists, Zürich, July 20, 1925. Verhandlungen of the Congress, Bd. II. pp. 1-19, Weimar, 1926.]

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **9**—Entomologist, London. **8**—Ent. Monthly Mag., London. **11**—Deutsche Ent. Zeitschrift, Berlin. **12**—Jour. of Economic Ent. **15**—Insecutor Inscitiae Menstruus, Washington. **17**—Ent. Rundschau, Stuttgart. **18**—Intern. Ent. Zeitschrift, Guben. **21**—The Entomologist's Record. **26**—Ent. Anzeiger, Wien. **30**—Tijdschrift voor Entomologie, The Hague. **33**—Bull. et An., Soc. Ent. Belgique. **37**—Proc. Hawaiian Ent. Soc. **49**—Ent. Mitteilungen, Berlin. **50**—Proc., U. S. National Museum. **64**—Zeit. Oesterr. Ent. Ver., Wien. **71**—Novitates Zoologicae. **72**—Revue Russe d'Entomologie. **75**—Ann. & Mag. of Nat. Hist., London. **77**—Comptes R., Soc. Biologie, Paris. **101**—Biological Bul., Woods Hole, Mass. **103**—Proc. Zool. Soc., London. **104**—Zeit. f. Wissens. Zool., Leipzig. **107**—Biologisches Zentralblatt. **111**—Archiv f. Naturgeschichte, Berlin. **116**—Annals of Applied Biology. **131**—Ent. Blaetter, Berlin. **133**—Jour. Experimental Zool. **141**—Amer. Naturalist. **153**—Bull. Museum Nat. Hist. Naturelle, Paris. **154**—Zool. Anzeiger, Leipsig.

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(S) **Berland, L.** Les Sphegidae du museum national de Paris.—**153,** 1926, p. 163-70. ***Ceballos, G.** Estefanidos del museo de Madrid (Stephan.)—**72,** ii, p. 135-147, ill.

SPECIAL NOTICES. Monograph of the tribe Hesperiidi (European species) with revised classification of the subfamily Hesperiinae . . based on the genitalic armature of the males (Trans. Ent. Soc. London, lxxiv, p. 1-170, ill. Although treating of the European species, this paper will prove to be of interest to all students of this family of the lepidoptera.

SYLLABUS DER INSEKTENBIOLOGIE, von DR. HANS BLUNCK: First installment (Berlin, Gebrüder Borntraeger, 1925).—The first part of Doctor Blunck's ambitiously planned Syllabus of the Biology of Insects has appeared. It includes the Coleoptera through Histeridae, and is issued as a pamphlet of 136 pages. Doctor Blunck has undertaken a stupendous task. That is to record all that has been published upon the life histories of insects, group by group and species by species. The literature of this subject is extremely fragmentary and diffuse. Short notes have been published in every language and in every country, and it is Doctor Blunck's aim to make it all available to workers in the most condensed way and in the form of a list. Very many renowned specialists are co-operating with him, and the total result will be invaluable to workers; and, more than that, it will be a stimulus to investigation, since by referring to its pages any one can easily see the gaps in our knowledge that are to be filled. The general plan as elaborated so far is to issue six volumes, as follows: Volume 1, Apterygota, Ephemerida, Odonata, Perlidae, Dermaptera, Orthoptera, Isoptera; Volume 2, Corrodentia, Thysanoptera, Hemiptera, Pediculidae; Volume 3, Neuroptera, Trichoptera, Lepidoptera; Volume 4*a*, Coleoptera; Volume 4*b*, Coleoptera with Strepsiptera; Volume 5, Panorpatae, Diptera, Aphaniptera; Volume 6, Hymenoptera.

If the subsequent parts are done as well as this first part of the Coleoptera (and, by the way, it seems strange that a part of Volume 4 should be published as the first one of the general scheme) all workers will be delighted. On account of the great mass of material, the author has found it necessary to use a large number of symbols and many abbreviations in the German language, but a little practice will enable its ready

use. I am delighted with the whole plan. Of course, I am not a Coleopterist, and have therefore asked my colleague, Mr. Herbert S. Barber, for his opinion of this first part. He shares my great interest in the work, and tells me that he heartily welcomes the appearance of this first number. He tells me that it will be "indispensable" for ready reference in the National Museum. Of course he does not mean *indispensable*, since he and his fellow workers have done very well down to the present time without it, but I imagine the reader will catch his meaning. He has pointed out to me a very few omissions of American records, but has pointed out also a number of records which brought together in this way give us much better ideas as to group habits than we would be likely to gain in any other way.

Of course, as the work goes on the degree of completeness must be expected to vary to some extent with the different collaborators, but, with such an excellent guide as this first part will be to them, a complete whole of very great value cannot fail to eventuate. L. O. HOWARD.

INSECTS OF WESTERN NORTH AMERICA. By E. O. ESSIG. New York: Macmillan Co., 1926. Pp. 1035. 766 figures.—The appearance of this book, by the Associate Professor of Entomology in the University of California, puts the whole subject of Western insects on a new and better footing. For the first time, we have a usable guide to our insect fauna west of the hundredth meridian. Within the limits of a single volume, even of more than a thousand pages, it is impossible to describe or even mention all the genera and species, but nearly all the commoner or more important ones are referred to. Species of economic importance, or otherwise specially interesting, are briefly described, and usually well figured. The recorded habits are very fully cited, and the references to literature are unusually complete. In short, the book is packed as full of valuable information as possible, and in the hands of an intelligent student, professional or amateur, it will be a constant and indispensable source of information. For those in other regions it will also be of great value, and perhaps especially to Entomologists in foreign countries, who have difficulty in keeping informed concerning the progress of American Entomology. It may not be unreasonable to hope that the impetus given to western Entomology by Essig's work will lead to other developments. The next thing to plan for should be a series of volumes, dealing with the several orders, and including all known genera and species. *The Lepidoptera of New York and Neighbouring States*, by Forbes (1923) would serve as a model,

though the fuller treatment of the *Fauna of British India,* could this style be adopted, is greatly preferable. The greatest obstacle to the development of such a plan is undoubtedly financial, but Entomologists should concertedly urge the claims of their science, supporting them by facts well known to them, but almost wholly unknown to the general public. For example, I learn from Mr. H. S. Smith that the total value of the oranges in California in 1925 was $79,200,000. The value of the lemons was $18,000,000. Los Angeles and Orange counties have approximately half the citrus acreage of the whole state. Los Angeles County in 1925 had 53,458 acres of bearing citrus trees. Orange County had 41,773 acres. They average about 90 trees to the acre. Los Angeles County spends over a million dollars a year fighting insects on the citrus trees; Orange County about nine hundred thousand. Without constant effort, breeding the *Cryptolaemus* ladybug in specially constructed insectaries and turning them loose every year in the orchards, the *Citrophilus* mealy-bug would undoubtedly ruin the whole industry. The black and red scales have to be fought incessantly, and now with renewed vigor because, following the teachings of Darwin, they have through a process of survival of the fittest developed resistance to cyanide fumes. We, who cheerfully eat oranges throughout the season, little imagine the trained intelligence, labor and expense which make it possible for us to have them at all. Such considerations, of an economic nature, should in themselves convince any one of the importance of supporting Entomological research and publication. Yet they may be reinforced by others, in some respects even more weighty. It is difficult to exaggerate the moral value of interest in nature, or the pleasure derivable from such interest. Though we are fed, housed and clothed, we shall never be really worth while, to ourselves or others, until we learn to appreciate the beautiful world in which we live and the marvelous order of the universe. This appreciation, like our regard for persons, is necessarily partly intellectual and partly emotional, and must rest on a basis of knowledge.

Examining the details in Essig's book, I marvel at the general accuracy. In such a mass of detail, occasional slips must occur, but those I notice are few, and generally due to mistakes in the literature cited. Thus on page 830 an *Aleyrodes* is called "*euphorbiara*". It was named *euphorbiarum,* but Quaintance and Baker, not recognizing a genitive plural, wanted to make the word agree in gender with *Aleyrodes,* and Essig copied the mistake. I am credited with publishing *Murgantia nigricans,* a synonym of *M. histrionica,* because it so appears in Van Duzee's

Catalogue. As a matter of fact, I published only a variety *nigricans*, the dark form common along the coast of Southern California. There is no dispute as to the existence of this form, and it stands exactly where I left it. The error in this case arose simply from the method of citation in the Van Duzee catalogue. There is more serious confusion in the Lepidopterous family Aegeriidae. *Alcathoë* is printed *Alcathœ*. *Aegeria* is made to include two quite distinct genera, *Aegeria* of the later lists, and *Synanthedon* or *Conopia*, the *Aegeria* of former times. This is the consequence of the way names have been shuffled and changed in this group, utterly confusing to anyone who has not closely followed the literature. It is rather singular that it is said of the larvae of the sawfly *Nematoneura malvacearum* that they "do not appear to attack cultivated hollyhocks," when the title of the original paper, duly cited, was "A New Sawfly which is Injurious to Hollyhocks." A few years ago I again found the larvae in Santa Fé, infesting hollyhocks in the garden of Dr. E. L. Hewett. The list of mayflies is by no means up to date; it ignores the work of Dodds and McDunnough.

Although the title refers only to insects, other terrestrial arthropods are included, and there is a most serviceable account of the Isopoda, scorpions, ticks and mites, etc. Only a few of the most conspicuous spiders are cited. An excellent feature is the large number of references to recorded parasitism, involving among other things a summary of the species of parasitic Hymenoptera. Many of the chapters have been submitted to specialists, with the result that we often find new or almost new synonymy, and other evidences of revisional work. The very full index is greatly to be commended.

T. D. A. COCKERELL.

OBITUARY.

On the morning of November 11th, 1926, CURTIS G. LLOYD died at Bethesda Hospital in Cincinnati at the age of 68. During a lifetime that was largely devoted to scientific work he built up in Cincinnati what is probably the largest collection of fungi in the world. Together with his brothers John Uri Lloyd and Nelson Ashley Lloyd, he founded the Lloyd Library in Cincinnati. This library contains more than 52,000 volumes, and is foremost in works on Materia Medica and Mycology.

The bulletins of this library he edited, and for the most part wrote. They are 27 in number. Five of them are mainly entomological and were prepared at Cornell University

They are as follows:

No. 1. North American Caddisfly Larvae, by J. T. Lloyd.

No. 2. Notes on the Biology of some of our North American Species of Mayflies, by Helen E. Murphy.

No. 3. Morphology, Anatomy and Ethology of Nemoura, by C. F. Wu.

No. 4. Neotropical Mayflies, by James G. Needham and Helen E. Murphy.

No. 5. A Preliminary Biological Survey of the Lloyd-Cornell Reservation, by members of the scientific staff of Cornell University.

The University of Cincinnati last June conferred upon him the honorary degree of Doctor of Science.

Dr. Lloyd was a real promoter of conservation. While many others talked wild-life preserves, he quietly brought them into existence: first a fine area of virgin forest near his boyhood home at Crittenden, Kentucky, which he filled with wild flowers. Then three of the choicest bits of nature near to Cornell University: one an area of cold, upland bogs near McLean; another a wild flower preserve in a woodland near Slaterville Springs; and the third a region of potholes in beech woods at Ringwood Hollow. All these he placed in the permanent keeping of a board of trustees for the benefit of the public.

J. G. NEEDHAM.

The deaths of the following entomologists were announced in *Science* for Nov. 19, 1926: Rev. FRANCIS DAVID MORICE, of England, Hymenopterist, on September 23 in his seventy-eighth year; TASUSHI NAWA, of Japan, known for his work on termites, aged seventy years; and Professor ERMANNO GIGLIO-TOS, professor of zoology in the University of Turin.

The number for the NEWS for December, 1926, was mailed at the Philadelphia Post Office on December 10th, 1926.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Thysanoptera: A small pocket collecting outfit containing vials, brush and memo sheets, sent free to entomologists interested in collecting thrips especially in foreign countries. Dudley Moulton, 244 California Street, San Francisco, California.

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Wanted—Bembidion (Coleoptera, Carabidae) from South America, Africa, Australia, India. Will buy or exchange for North American Species. Howard Notman, 136 Joralemon St., Brooklyn, N. Y., U. S. A.

Pselaphidae desired from all parts of N. A. for study. Will determine for privilege of study or pay cash. Am monographing family. F. C. Fletcher, Dept. of Entomology, Cornell University, Ithaca, N. Y.

Buprestidae—I am making a revisional study of the North American Agrilus, and will be glad to examine any material in this genus collected north of Mexico. W. S. Fisher, U. S. National Museum, Washington, D. C.

Chrysomelidae—Desire to exchange coleoptera, especially in family Chrysomelidae. Send me your offerta in this family and your desiderata in coleoptera. Paul N. Musgrave, 601 Walnut Ave., Fairmont, W. Va.

Wanted—Cicindelidae & Cerambycidae in exchange for local coleoptera. Address Ernest Baylis, 5011 Saul Street, Philadelphia, Pa.

Buprestidae of the world and N. A. Carabidae and Rhynchophora wanted in exchange for other Coleoptera. Will buy rare species. Alan S. Nicolay, 198 Fernwood Ave., Upper Montclair, N. J.

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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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